CLAIMS

WHAT IS CLAIMED IS:

1. A food grade colored fluid comprising a food grade dye, glycerine, at least about 25 wt.% 1,2-propanediol, and optionally water;

wherein the 1,2-propanediol, glycerine and any optional water make up at least about 90 wt.% of the colored fluid, and any water present makes up no more than about 35 wt.% of the colored fluid.

2. The colored fluid of Claim 1 comprising at least about 2 wt.% glycerine.

3. The colored fluid of Claim 1 comprising at least about 70 wt.% 1,2-propanediol.

4. The colored fluid of Claim 1, wherein any water present makes up no more than about 20 wt.% of the colored fluid.

5. The colored fluid of Claim 1, wherein any water present makes up no more than about 1 wt.% of the colored fluid.

6. The colored fluid of Claim 1 comprising about 0.1 to 10 wt.% of the food grade dye.

7. The colored fluid of Claim 1, wherein the food grade dye comprises FD&C Red #3, FD&C Red #40, FD&C Yellow #5, FD&C Yellow #6, FD&C Blue #1 or a mixture thereof.

8. The colored fluid of Claim 1, wherein the food grade dye comprises a natural dye.

9. The colored fluid of Claim 1, wherein the colored fluid has a viscosity of about 8 to 14 cps at 60°C.

10. The colored fluid of Claim 1, wherein the colored fluid has a surface tension of about 20 to 60 dynes per cm at 25°C.

11. The colored fluid of Claim 1, wherein the colored fluid has a silt density index of at least 0.5.

12. The colored fluid of Claim 1, wherein the food grade dye has an inorganic salt content of no more than about 0.5 wt.%.

13. The colored fluid of Claim 1, wherein the food grade dye has a chloride ion content of no more than about 0.5 wt.% and a sulfate ion content of no more than about 0.5 wt.%.

14. The colored fluid of Claim 1, wherein the colored fluid has a Brookfield viscosity at 60°C that changes by no more than about 2 cps over a shear rate range from 10 to 45 rpm.

15. A food grade colored fluid comprising about 0.1 to 10 wt.% food grade dye, about 25 to 95 wt.% 1,2-propanediol, about 1 to 50 wt.% glycerine, and no more than about 35 wt.% water; wherein the colored fluid has a viscosity of about 8 to 14 cps at 60 °C.

16. A food grade colored fluid comprising a food grade dye, a food grade glycol, optionally glycerine and optionally water; wherein the food grade glycol and any optional glycerine and water make up at least about 90 wt.% of the colored fluid, and any water present makes up no more than about 35 wt.% of the colored fluid; and further wherein the colored fluid has a Brookfield viscosity at 60°C that changes by no more than 2 cps over a shear rate range from about 10 to 45 rpm.

17. The colored fluid of Claim 16, wherein the colored fluid has a surface tension of about 35 to 50 dynes per cm at 25°C.

18. The colored fluid of Claim 16 comprising at least about 25 wt.% 1,2-propanediol.

19. The colored fluid of Claim 16, the colored fluid having a viscosity of about 35 to 65 cps at 25°C.

20. A food grade colored fluid comprising a food grade dye and at least about 25 wt.% 1,2-propanediol, wherein the food grade dye has an inorganic salt content of no more than about 0.5 wt.%.

21. The colored fluid of Claim 20 comprising at least about 70 wt.% 1,2-propanediol, glycerine or a mixture thereof.

22. The colored fluid of Claim 20, wherein the colored fluid has a viscosity of about 35 to 65 cps at 25°C.

23. A food grade colored fluid comprising a food grade dye and at least about 70 wt.% 1,2-propanediol, glycerine or a mixture thereof;

wherein the colored fluid has a viscosity of about 35 to 65 cps at 25°C.

24. The colored fluid of Claim 23 comprising at least about 40 wt.% 1,2-propanediol.

25. The colored fluid of Claim 23 comprising at least about 85 wt.% 1,2-propanediol.

26. The colored fluid of Claim 23 comprising about 2 to 10 wt.% glycerine.

27. The colored fluid of Claim 23 comprising no more than about 30 to 45 wt.% glycerine.

28. The colored fluid of Claim 23 further comprising isopropanol, ethanol or a mixture thereof.

29. The colored fluid of Claim 23 further comprising methylparaben, propylparaben or a mixture thereof.

30. The colored fluid of Claim 23 comprising no more than about 20 wt.% water.

31. The colored fluid of Claim 23 comprising no more than about 1 wt.% water.

32. The colored fluid of Claim 23, wherein the food grade dye comprises FD&C Red #3, FD&C Red #40, FD&C Yellow #5, FD&C Yellow #6, FD&C Blue #1 or a mixture thereof.

33. The colored fluid of Claim 23, wherein the colored fluid has a surface tension of about 35 to 50 dynes per cm at 25°C.

34. The colored fluid of Claim 23, wherein the food grade dye has an inorganic salt content of no more than about 0.5 wt.%.

35. The colored fluid of Claim 23, wherein the food grade dye has a chloride ion content of no more than about 0.5 wt.%.

36. The colored fluid of Claim 23, wherein the food grade dye has a sulfate ion content of no more than about 0.5 wt.%.

37. The colored fluid of Claim 36, wherein the food grade dye has a chloride content (as sodium chloride) of no more than about 1000 ppm and a sulfate content (as sodium sulfate) of no more than about 1000 ppm.

38. The colored fluid of Claim 23, wherein the colored fluid has a silt density index of at least about 0.5.

39. The colored fluid of Claim 23, wherein the food grade dye comprises a natural dye.

40. The colored fluid of Claim 39, wherein the natural dye comprises a turmeric oleoresin, a cochineal extract, gardenia yellow, gardenia blue, beet powder or a mixture thereof.

41. The colored fluid of Claim 23, wherein the colored fluid has a viscosity of about 8 to 14 cps at 60°C.

42. A method of applying an edible colorant to a surface of an edible substrate, comprising ink jet printing the food grade colored fluid of Claim 1 directly onto the surface.

43. The method of Claim 42, wherein the surface is a porous surface.

44. The method of Claim 42, wherein the food grade colored fluid has a viscosity of about 8 to 14 cps at a temperature between about 20 and 75°C.

45. The method of Claim 42, wherein the food grade colored fluid has a viscosity of about 8 to 14 cps at 60°C.

46. The method of Claim 42, wherein the ink jet printing takes place at a jetting temperature of about 25 to 75°C.

47. The method of Claim 42, wherein the ink jet printing takes place at a jetting temperature of about 50 to about 70°C.

48. The method of Claim 42, wherein the ink jet printing takes place using at least one piezoelectric print head.

49. A method of applying an edible colorant to a surface of an edible substrate, the method comprising ink jet printing the food grade colored fluid of Claim 16 directly onto the surface.

50. A method of applying an edible colorant to a surface of an edible substrate, the method comprising ink jet printing the food grade colored fluid of Claim 20 directly onto the surface.

51. A method of applying an edible colorant to a surface of an edible substrate, the method comprising ink jet printing the food grade colored fluid of Claim 23 directly onto the surface.

52. An edible substrate having the food grade colored fluid of Claim 1 applied to at least one surface thereof.

53. The edible substrate of Claim 52, wherein the at least one surface is a porous surface.

54. The edible substrate of Claim 52, wherein the edible substrate is selected from the group consisting of crackers, chewing gum, biscuits, cereal, taco shells, granola bars, rice cakes, cookies, pie crusts, waffles, cakes, marshmallows, candies, pasta and bread products.